RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 90 days from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITENSS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

We Service What We Sell

RADIO SHACK
A Division of Tandy Corporation
Fort Worth, Texas 76102

Printed in Hong Kong

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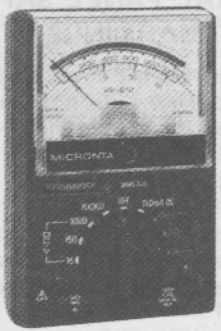
MICRONTA®

2,000 OHMS/VOLT
AC/DC MULTITESTER



CAT. NO. 22-212A

OWNER'S MANUAL

Your new Multitester measures AC and DC voltages, DC current, and resistance with accuracy and ease. This compact unit uses a 1.5 volt AA battery for resistance measurements.

SPECIAL PANEL SAFETY MARKINGS

⏚ To avoid electric shock and/or instrument damage, do not connect the common input terminal (– jack) to any source of more than 500 volts with respect to ground.

ϟ Be extra careful when making measurements for high voltage, do not touch terminals or probe ends.

⚠ Refer to the following complete operating instructions.

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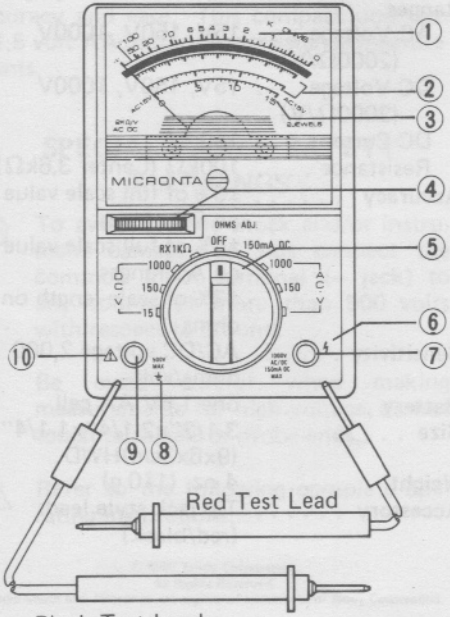
SPECIFICATIONS

Ranges	
AC Voltage . . . (2000Ω/V)	15V, 150V, 1000V
DC Voltage . . . (2000Ω/V)	15V, 150V, 1000V
DC Current . . .	150mA
Resistance	100kΩ (Center 3.6kΩ)
Accuracy	±3% of full scale value on DC ranges ±4% of full scale value on AC ranges ±3% of scale-length on ohms
Sensitivity	AC/DC voltage 2,000 ohms/volt
Battery	one 1.5V AA cell
Size	3-1/2"x2-1/4"x1-1/4" (9x6x3cm)HWD
Weight	4 oz. (110 g)
Accessory	Tip jack style leads (red/black)

CONTROLS AND FUNCTIONS



① K OHMS scale
② AC·V/DC· V/DCmA scale
③ AC 15V scale
④ OHMS ADJust
⑤ Range switch
⑥ Caution; Do not touch terminals or probe ends.
⑦ 1000V AC/DC 150mA MAX (for red lead)
⑧ Ground caution
⑨ 500V MAX (for black lead)
⑩ Refer to instructions

WARNING: USE EXTREME CAUTION IN THE USE OF THIS DEVICE. IMPROPER USE OF THIS DEVICE CAN RESULT IN INJURY OR DEATH. FOLLOW ALL SAFEGUARDS SUGGESTED IN THE OWNER'S MANUAL IN ADDITION TO NORMAL SAFETY PRECAUTIONS IN DEALING WITH ELECTRICAL CIRCUITS. **DO NOT** USE THIS DEVICE IF YOU ARE UNFAMILIAR WITH ELECTRICAL CIRCUITS AND TESTING PROCEDURES.

TIPS FOR USING YOUR MULTITESTER

Your Multitester is designed with a precision meter to avoid mechanical shock. When using this tester, pay particular attention to polarities and check positive and negative points. The red lead connects to positive points and the black lead to negative.

If you are checking unknown voltage and currents, use highest range first, then next lower range, and so on until readings can be obtained.

For most accurate readings, keep the meter lying flat on a non-metallic surface. Also, use a range setting that results in a reading in the upper third of the meter scale.

For exact readings, look at the scale from the point where the pointer and its reflection on the mirror come together; otherwise a reading error may result due to parallax.

DC/AC VOLTAGE MEASUREMENTS

WARNING: USE EXTREME CARE WHEN MAKING MEASUREMENTS FOR HIGH VOLTAGE; DO NOT TOUCH TERMINALS OR PROBE ENDS.

1. Plug the test leads into the correct jacks. (black into ⊖ and red into ⊕.)
2. Set range switch to one of the DCV/ACV positions; it is best to start at the top and work down. If you are not certain about the voltage level, start with 1000V range.
3. Touch the test probe tips to the circuit under test; be sure to observe correct polarity.
4. Read the voltage on the black DC/AC scales. For AC 15V, read the red AC 15V scale.

TEST LEADS

Use only the same type test leads as are supplied with your unit. These test leads are rated for 1000 volts; replacements are available from your local Radio Shack store.

BATTERY INSTALLATION

A battery is required for resistance measurements.

To install, use a phillips screwdriver to remove the screw on the back cabinet. Pull apart the front and back cabinets. Insert one AA battery (not supplied) in the battery compartment observing correct polarity. We recommend our 23-582 or 23-552 batteries.

Never leave a weak or dead battery in your unit. Even "leak-proof" types may leak damaging chemicals. Remove the battery when you don't intend to use your unit for more than a week.

TO AVOID ELECTRIC SHOCK, DISCONNECT MEASURING TERMINALS BEFORE INSTALLING OR REMOVING BATTERY.
OPEN CABINET ONLY WHEN REPLACING BATTERY. DO NOT TOUCH ANY INSIDE AREA OTHER THAN THE BATTERY.

OPERATION

CAUTION: THE MAXIMUM INPUT LIMIT FOR VOLTAGE AND CURRENT MEASUREMENTS BETWEEN + AND — IS 1000V AC, 1000V DC AND 150 mA DC.

1.
2.
3.
4.

DC CURRENT MEASUREMENTS

WARNING: DO NOT APPLY VOLTAGE TO MEASURING TERMINALS WHILE RANGE SWITCH IS IN CURRENT POSITION.

1. Plug the test leads into the correct jacks.
2. Set the range switch to the 150 mA position.
3. Open up the circuit in which you want to measure current and connect the black lead to the negative side and the red lead to the positive side of the circuit.
4. Apply power to the circuit under test and read the current on the black DC scale.

RESISTANCE MEASUREMENTS

Install a battery for resistance measurements.

Before taking any resistance measurements, disconnect power to the unit under test and discharge capacitors.

WARNING: DO NOT APPLY VOLTAGE TO MEASURING TERMINAL WHILE RANGE SWITCH IS IN OHMS POSITION.

1. Plug the test leads into the ⊖ and ⊕ jacks.
2. Set range switch to the ohm position (Rx1kΩ); touch the test probe tips together and adjust the OHMS ADJust control to bring the pointer to the "0" on the top (red) OHMS scale.
3. Now, touch the probe tips across the circuit or the part under test.
4. Read the resistance on the red OHMS scale.

Notes: When you are unable to adjust the pointer to "0" on the OHMS scale, the battery must be replaced. When measuring resistance, it is best to disconnect one side of the part under test so that the remainder of the circuit will not interfere with the readings.

CAUTION: ALWAYS DISCONNECT TEST LEADS BEFORE REPLACING BATTERY.

Note for Testing Semiconductor Junctions: When attempting to identify cathode and anode ends or the type of transistor (PNP or NPN), the actual polarity of the tester's voltage is opposite of the lead colors. The red lead is the negative source. The black lead is positive.

TIPS FOR BEST HANDLING

① Always observe correct polarity; red lead to positive and black lead to negative terminal.

② When checking unknown voltages, use the highest range first and gradually decrease until readings are obtained.

③ For exact readings, look at the scale from the point where the pointer and its reflection in the mirror come together; otherwise a reading error due to parallax will result.